PRIMARY USE: To treat the runoff from streets polluted by vehicles.
ADDITIONAL USES: To treat the air-borne particles created by fossil fuel driven vehicles, to create safer driving conditions, and to create a more aesthetic roadway environment.

ROADWAY LANDSCAPE TREATMENT SYSTEM

What is it? Roadways produce and transport a large amount of nonpoint source pollution including nitrates, hydrocarbons, zinc, lead, benzene and other toxic chemicals, and bacteria. The Roadway Landscape Treatment System can be a retrofitted treatment or planned when the roadway is being designed. The system consists of street trees, a grass filter strip downhill from the roadway and a detention swale that will collect, detain, and treat polluted water and extract sediment. Street trees should be located from 7-15 ft (2-4.6 m) from the road edge and spaced from 30-40 ft (9-12 m) apart. The grass filter strip should be from 10-30 ft (3-9 m) wide and can be mowed frequently or infrequently. The detention swale should be a series of shallow, linear pools no deeper than 12-18 in (305-457 mm) in which moist-condition loving plants are cultivated. The pools should detain water 24-36 hours for best treatment.

Purpose

This system will significantly reduce nonpoint water pollution, air pollution, traffic accidents, and it will create a more attractive environment to drive through and to develop beside.

Roadway Landscape Treatment System
Section View

Limitations

The system is a living system and therefore needs regular management and observation. Trees will need to be pruned up yearly, and mulched. Trees will need fertilizing and watering for the first two to three years until they are established. When they die, they will need to be removed and replaced. The filter strip will need a minimum of one mowing per year, if it is not being mowed as a grass lawn. Litter will need to be removed from the treatment pools monthly and the pools will need to be managed to contain and treat the runoff. The public will need to be educated about the environmental enhancement traits of the Roadway Landscape Treatment System.

Materials

Trees should be selected for long life and compatibility with the existing soils and landscape locations (ridgetop, bottomland, and sideslope). In the South, trees should also be selected for resistance to ice storm damage. Grasses should be selected to match existing soil pH levels.

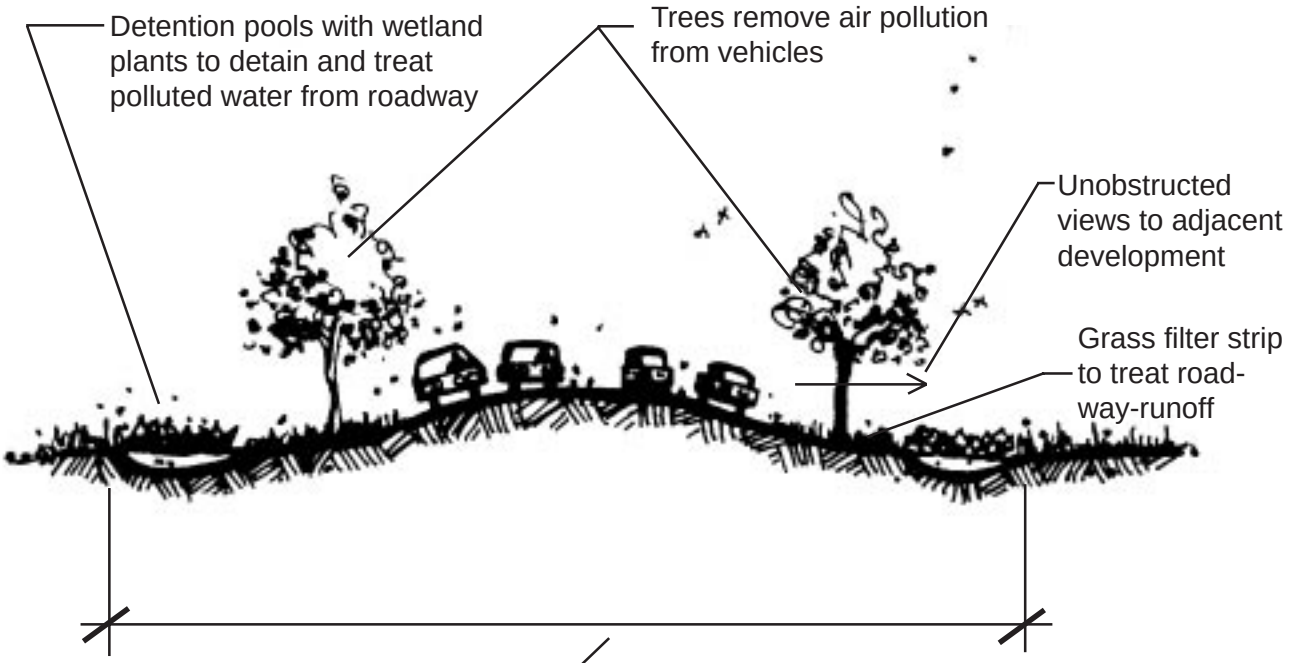
Installation

Trees will need to be staked and guyed for two years until roots are established and then the staking should be removed. If establishing a native prairie planting, obtain prairie hay to innoculate soil with native grasses and forbs or use native seeds and/or plants. Treatment swale plantings will establish themselves or you can begin the planting with selected wet-soil tolerant plants. Mulch street trees with a 3 ft (0.9 m) ring of mulch to cool the soil and retain moisture for establishing tree roots. Detention swales should be in cells according to slope and drainage conditions.

Source: Center for Sustainable Design, Landscape Architecture/Biological Engineering Departments; Mississippi State University.

ROADWAY LANDSCAPE TREATMENT SYSTEM

Additional Drawings:



Roadway Landscape Treatment System
Section View

Source: Center for Sustainable Design, Landscape Architecture/Biological Engineering Departments; Mississippi State University.